Space Weather Forecast

Issued on Sunday 2 March 2025 at 00:17 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor Geomagnetic Storm G1 late Tuesday 04 March and into UTC midweek. Chance of Moderate-class X-ray flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Low, with a generally decreasing cadence of Common-class flares, that was then capped by a peak high-end Common-class flare at 01/2301UTC from the southeastern solar horizon. This was possibly tied to a returning region in the vicinity, generating a Coronal Mass Ejection (CME) off the Sun-Earth line.

There are now up to nine regions on the facing side of the Sun, with two new minor regions becoming visible near the eastern horizon and with a third developing in the northeast. The current facing side is mostly the preserve of relatively simple regions magnetically, however the three main groups were also the most-changed. In the northwest, one of these larger region showed areal decay and consolidation. In the southwest, a second group saw its leaders fade, but this trend was countered by emergence and development of new trailers to reform the group's centre of gravity further east on the Sun. Finally, a third region showed a spreading and consolidating tendency, but with areal growth.

The leading spot group of a sunspot region in the northwest produced a number of jet-like emissions angled north of the Sun-Earth line in the period - these are not anticipated to affect Earth. More significantly, a large 'filament eruption' (arc of plasma leaving the Sun as a CME) occurred from the southeastern quadrant around S25E030 at 01/1730UTC. A CME was then visible in satellite imagery. This has been analysed, and a provisional result suggests a crossing time of the Earth's orbit at around 04/2100UTC, although this result is subject to revision as more imagery becomes available.

Solar Wind / Geomagnetic Activity: Solar winds are indicative of an ongoing connection to a strong but waning fast wind.

Solar wind speeds have been at strong levels but gradually waning. The number of particles was within average, and their associated magnetic field fell slightly within typical values.

The net result of the above solar wind measures was for geomagnetic indices below Minor Geomagnetic Storm G1 throughout.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

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Met Office

Space Weather Forecast

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity carries a daily chance of becoming moderate, with isolated Moderate-class flares. This may rise slightly into the start of the new UTC week as sunspot regions return over the eastern solar horizon.

Solar Wind / Geomagnetic Activity: A CME from the 01/1730UTC 'filament eruption' from the southeast may affect Earth as a glancing blow around 04/2100UTC

Otherwise, fast wind influence is expected to now wane, with strong winds gradually and erratically easing to background.

Geomagnetic activity will become quiet for a time into the new UTC working week (from Monday 03 March), before the above CME then brings a Chance of Minor Geomagnetic Storm G1 to end Tuesday 04 March and on into midweek UTC.

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	20	30
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	40	50	50	50
Very Active	R3-R5 (X Class)	No	1	1	1	1

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	2	2	5	5
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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